



The newsletter of the SPM4.0
Marie Skłodowska-Curie Doctoral Network

*Autonomous, AI-Driven
Scanning Probe
Microscopy for Life
Sciences and Medicine*

SPM4.0 Objectives

SPM4.0 is a Marie Skłodowska-Curie Doctoral Network dedicated to the development of intelligent, autonomous scanning probe microscopes powered by Artificial Intelligence for cutting-edge applications in life science and medicine. Its objectives include real-time, sub-10 nm structural, mechanical, and electrical imaging of living cells and biomolecules under physiological conditions, autonomous control and artifact correction, and AI-driven data processing. The project combines the creation of functional, user-friendly SPM instruments with advanced software, while training a multidisciplinary cohort of researchers in microscopy, machine learning, robotics and biophysics. By promoting the adoption of these next-generation SPM4.0 technologies across academia, industry and metrology institutions, the network seeks to open new frontiers in label-free cellular imaging, disease diagnosis, and nanocarrier development, positioning Europe at the forefront of nanomedicine innovation.

The project kick-off meeting took place at IBEC in Barcelona the 13th and 14th of November 2024 ([news link](#)).



SPM4.0 intends to...

... accelerate the adoption of AI-powered microscopy in academic, industrial, and metrology environments by fostering expertise in label-free nanoscale imaging of living cells and functional biomolecules, contributing to Europe's leadership in next-generation nanotechnology.

The network trains researchers in cutting-edge microscopy, machine learning, and their biological and clinical uses, while also providing complementary skills to enhance career projections across sectors. SPM4.0 advances the integration of Artificial Intelligence into Scanning Probe Microscopy to drive a new generation of autonomous nanoscopic imaging tools for Life Science and Medical applications.



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HORIZON – MSCA – 2023 – DN-01 Project: 101168976 - SPM4.0



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Project Consortium

The consortium shaped for the SPM4.0 Network is composed of **12 beneficiaries and 10 associated partners, including research institutes, universities and companies**, ensuring the highest quality research environment for the DCs. It provides a well-balanced multisectoral approach between research and transfer into industrial practice and covers the entire chain from basic science and technology to product development and end-user application. With this composition the consortium covers all the research fields required to successfully achieve the goals of training the next generation of multidisciplinary researchers in the field of SPM4.0 techniques and related applications in Life Sciences and Medicine. <https://spm40.eu/consortium/>

Beneficiaries

Institute of Bioengineering of Catalonia (IBEC)	Spain	Gabriel Gomila, Eduard Torrents
Consejo Superior de Investigaciones Científicas (CSIC)	Spain	Ricardo Garcia Garcia
University of Gothenburg (UGOT)	Sweden	Giovanni Volpe
Sorbonne Université (SU)	France	Mokrane Boudaoud, Nicolas Thome, Clement Rambour
Technische Universität Dresden (TUD)	Germany	Anna Taubenberger
Bruker Nano GmbH (BRKR BioAFM)	Germany	David Ehrenberg
Datrix SPA (DATRIX SPA)	Italy	Elia Broggio, Michele Compare
Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences (IFJ PAN)	Poland	Małgorzata Lekka
Cesky Metrologicky Institut (CMI)	Czech Republic	Petr Klapetek
Fundacio Hospital Universitari Vall d'Hebron - Institut de Recerca (VHIR)	Spain	Fernanda Andrade, Diana Fernandes, Simo Schwartz Navarro
Charité – Universitätsmedizin Berlin (CHARITE)	France	Ingolf Sack
Curapath (Polypeptide Therapeutic Solutions S.L.) (PTS)	Spain	Aroa Duro, Sergio Esteban

Associated Partners

Universitat de Barcelona (UB)	Spain	Juan Marcos Fernandez
Universidad Autónoma de Madrid (UAM)	Spain	Pedro José de Pablo
Scixel (SCIXEL)	Spain	Enrique Sahagun, Alonso Enrique
Politecnico di Milano (POLIMI)	Italy	Dario Polli
Brno University of Technology (BUT)	Czech Republic	Tomáš Šikola
Universitat Autònoma de Barcelona (UAB)	Spain	Simo Schwartz Navarro
Fundación ESDADE (ESADE)	Spain	Jordi Vinaixa
Universitat de València (UVEG)	Spain	Patricia Hernández
Innovations for Life Sciences through Artificial Intelligence (IFLAI AB)	Sweden	Mattias Goksor
University of Sheffield (USFD)	United Kingdom	Alice L. B. Pyne





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Doctoral Candidates

The consortium will have the participation of 16 Doctoral Candidates, 15 of them have already been recruited and the last one will join the project in the next few days, at the beginning of December 2025. More detailed information on each fellow is presented in the SPM4.0 website (<https://spm40.eu/fellows/>).



DC1 – IBEC-CERCA
Sophie Strawbridge



DC2 – CSIC
Gioloe Gorgone



DC3 – UGOT
Prakhar Dutta



DC4 – SU
Bruno Boato



DC5 – IBEC-CERCA
John Pazos



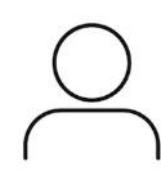
DC6 – TUD
Johannes Low Jun Wei



DC7 – BRKR BioAFM
Nazli Demirpehlivan



DC8 – DATRIX SPA
Marc Rodríguez Salazar



DC9 – IFJ PAN



DC10 – CMI
Gabriele Gradara



DC11 – VHIR
Vincenzo Montanarella



DC12 – CHARITE
Jing Zeng



DC13 – PTS
Adele Mana



DC14 – IBEC CERCA
Belle Clayton



DC15 – UGOT
Jiacheng Huang



DC16 – USFD
Attila Barna



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Recent Highlights

SPM4.0 midterm meeting and first training workshop held in Berlin



Bringing together researchers, supervisors and partners from across Europe, the SPM4.0 consortium held a productive week in Berlin that combined its first training workshop with the project's midterm meeting. The event marked a key milestone for the network, strengthening collaboration and advancing the training programme for its doctoral candidates.

[News link](#)

SPM4.0 takes part at the European Researchers Night

On 26 September 2025, researchers from all over Europe took part in one more European Researchers' Night, and in this context, SPM4.0 was showcased in three different activities in Barcelona, Spain, that presented the project and discussed the science behind it.

[News link](#)



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Recent Highlights

First NanoThera Summit: organized by SPM4.0 partner CURAPATH



The inaugural edition of NanoThera Summit in Valencia, Spain, has been a complete success! It was largely due to the organisation by Curapath, a key partner in the SPM4.0 project, specialized in the tailored design, development, and GMP manufacturing of cutting-edge polymer and lipid-based drug delivery systems.

[News link](#)

SPM4.0 brings science to the spotlight at Comic Barcelona 2025

From 4 to 6 April, the 43rd edition of Comic Barcelona—one of Europe's leading comic events—took place in Barcelona, Spain. This year's event featured many voices, including that of Aurora Dols, a researcher at the Institute for Bioengineering of Catalonia (IBEC) and member of the SPM4.0 project, who led several initiatives aimed at connecting scientific research with society.

[News link](#)



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<https://www.linkedin.com/showcase/spm40>



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#SPM40

<https://spm40.eu>

BENEFICIARIES

Coordinator:



Institute for Bioengineering of Catalonia



CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



UNIVERSITY OF
GOTHENBURG



SORBONNE
UNIVERSITÉ



TECHNISCHE
UNIVERSITÄT
DRESDEN



THE HENRYK NIEWODNICZANSKI
INSTITUTE OF NUCLEAR PHYSICS
POLISH ACADEMY OF SCIENCES



CZECH
METROLOGY
INSTITUTE



Vall
d'Hebron
Institut de Recerca



CHARITÉ
UNIVERSITÄTSMEDIZIN BERLIN



CURAPATH

ASSOCIATED PARTNERS



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